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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/312,479	05/17/99	HENNICK	R 289-237.10
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MM01/0710

EXAMINER

LUU, T

ART UNIT

PAPER NUMBER

2878

DATE MAILED:

07/10/01

Please find below and/or attached an Office communication concerning this application r
proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/312,479

Applicant(s)

HENNICK ET AL.

Examiner

Thanh X Luu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 and 45-79 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 and 45-79 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to amendments and remarks filed April 20, 2001. Claims 1-37 and 45-79 are currently pending.

Claim Objections

2. Regarding claims 45 and 58, "said image sensor" lacks proper antecedent basis.
Regarding claim 46, "said optical subassembly" lacks proper antecedent basis.
Regarding claim 47, "at least one of said optical subassemblies or image sensor subassemblies" lacks proper antecedent basis. There appears to be only one subassembly of each type.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1-25 and 45-58 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claim 1,

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the phrase "without a substantially rigid component part of the image sensor assembly being substantially benched in either of an x or y direction against a substantially rigid component part of the optical subassembly", claim 13, the phrase "wherein said optical subassembly and the image sensor subassembly are substantially configured so that the image sensor subassembly and said optical subassembly are not substantially benched against one another either of an x or y direction prior to said soldering step", claim 46, the phrase "without substantially benching said optical subassembly relative to said image sensor subassembly against one another in either of the x direction or y direction", it does not appear that Applicant has disclosed such language in the specification. Nowhere does the specification mention the terms "without substantially benching" or "not substantially benching." Furthermore, the word benched or benching could not be found anywhere in Applicant's specification. In addition, nowhere in the specification does Applicant specify the difference between a "benched" component part and a "substantially benched" component part. Regarding claim 13, only, the terms "substantially configured" could not be found in the specification. In the event that Examiner is mistaken, Applicant should point out where support exist in the specification. Otherwise, Applicant is reminded that no new matter can be added.

6. Claims 1-25 and 45-79 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1-25 and 45-58, it is unclear what Applicant means with the use of the words "benching" or "benched." Furthermore, the phrases having "without..."

and "not..." terminology are negative limitations. Applicant is reminded that the invention should be claimed with elements that are present in the invention, not with language specifying what is not there.

Regarding claims 1-25 and 46-79, the use of the term "substantially rigid" or "substantially benched" or "substantially configured" is indefinite since the exact rigidity or range of rigidity or the condition of being benched or configured cannot be determined.

Regarding claims 45 and 58, it is unclear how alignment is done by providing a video monitor displaying an output of the image sensor. Furthermore, the image sensor is still being put together from an optical subassembly and an image sensor subassembly, the essential step of connecting or activating the image sensor seems to be missing. It is also unclear how the image sensor is read out when it is still being assembled.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 4, 7, 12, 13, 15, 18, 23, 24, 26-28, 31-33, 35, 37, 46, 47, 49, 52, 53, 55 are rejected under 35 U.S.C. 102(e) as being anticipated by Kropp (U.S. Patent 5,902,997).

Regarding claim 1, Kropp discloses (see Figure 4) a method for mounting an optical subassembly (44, 45) of an optical reading device to an image sensor subassembly (40) of an optical reading device, the method comprising the steps of: moving the optical and image sensor subassemblies in proximity with one another; and soldering the optical and image sensor subassemblies together with a solder material (see column 5, lines 13-17 and lines 46-52). Kropp further discloses (see Figure 4) soldering without a substantially rigid component part of the image sensor assembly being substantially benched in either of an x or y direction against a substantially rigid component part of the optical subassembly.

Regarding claim 13, Kropp discloses (see Figure 4) a method for mounting an optical subassembly to an image sensor subassembly, the method comprising the steps of: forming at least one solderable surface on at least one of the optical and image sensor subassemblies (see column 5, lines 14-16); moving the optical subassembly (44, 45) in proximity with the image sensor subassembly (40) to define an interface delimited by at least one solderable surface of the optical subassembly or the image sensor subassembly; and soldering the optical subassembly and the image sensor subassembly together at the interface (see column 5, lines 13-16 and lines 45-53). Kropp the optical subassembly and the image sensor subassembly are inherently substantially configured so that the image sensor subassembly and the optical

subassembly are not benched against one another either of an x or y direction prior to the soldering step. That is, at some inherent point in time before being pictured in the figures, the subassemblies are substantially configured in alignment to one another such that the subassemblies are not benched against one another as claimed.

Regarding claim 26, Kropp discloses (see Figures 3 and 4) an image sensor subassembly comprising: a substantially rigid member (40); an image sensor chip (42) disposed on the substantially rigid member; and a solderable surface (52) formed on the substantially rigid member (see also column 5, lines 14-16). Kropp further discloses (see Figure 4) the solderable surface being of a configuration selected from a group consisting of a hole (52), a pin (46) or threaded screw.

Regarding claim 32, Kropp discloses (see Figures 3 and 4) an optical subassembly comprising: a substantially rigid member (44); an optical element (45) disposed on the substantially rigid member; and a solderable surface (40) formed on the substantially rigid member (see also column 5, lines 14-16 and lines 45-53). Kropp further discloses (see Figure 4) the solderable surface being of a configuration selected from a group consisting of a hole (52), a pin (46) or threaded screw.

Regarding claim 46, Kropp discloses (see Figure 4) a method of making an optical and image sensor assembly, the assembly comprising an optical image sensor subassembly and an image sensor subassembly, the method comprising: aligning the optical subassembly and the image sensor subassembly relative to one another without substantially benching the subassemblies against one another in either the x or y

directions; and when the subassemblies are properly aligned, securing the subassemblies together.

Regarding claim 47, Kropp discloses (see column 5, lines 14-16) forming a solderable surface (40, 52) on at least one of the optical or image sensor subassemblies. Kropp further discloses soldering the optical subassembly and the image sensor subassembly together at the interface (see column 5, lines 13-16 and lines 45-53).

Regarding claim 2, Kropp discloses (see column 5, lines 14-16) forming a solderable surface (40, 52) on at least one of the optical or image sensor subassemblies.

Regarding claims 4, 15 and 49, Kropp discloses (see column 5, lines 47-50) plating (metallizing) a solderable material (metal) onto a non-solderable material (40).

Regarding claims 7, 18, 27, 33 and 52, Kropp discloses (see Figure 4) making the solderable surface (40 or 52) in an irregular configuration having an increased surface area per unit three dimensional space relative to that of a smooth surface.

Regarding claims 28 and 55, Kropp disclose (see Figure 4) the solderable surface is made in the configuration of a hole (52).

Regarding claims 12 and 23, Kropp discloses (see Figure 4) forming a solderable pin (46) on one of the subassemblies and making a hole (48) for receiving the pin on the remaining of the subassemblies.

Regarding claim 24, the optical elements of Kropp are inherently aligned with imaging elements of the image sensor subassembly (see Figure 3).

Regarding claims 31 and 37, Kropp discloses (see Figure 3) the at least one solderable surfaces include four solderable surfaces (40a-d, 52a-d) formed about a periphery of the image sensor or the optical element.

Regarding claims 35 and 53, Kropp discloses (see Figure 4) the solderable surface is in the configuration of a pin (40).

9. Claims 73, 74 and 76-78 are rejected under 35 U.S.C. 102(e) as being anticipated by Christensen (U.S. Patent 5,753,908).

Regarding claim 73, Christensen discloses (see Figures 4 and 5) an optical reading device comprising: an optical and image sensor assembly including an image sensor subassembly including an image sensor (52) mounted on a substantially rigid planar member (50), an optical subassembly (80, 10) including an optical element (22, 20, 18, 16) disposed on a substantially rigid member (frame or housing), at least one solderable surface (see Figures 4 and 5) formed on either of the optical subassembly or the substantially rigid planar member defining at least one solder receiving interface between the substantially rigid planar member and the optical subassembly (see Figure 1), solder material for bonding (see column 5, lines 20-30) the subassemblies disposed at the at least one solder receiving interface, and a housing (see Figure 1), the optical and image sensor assembly being disposed in the housing.

Regarding claim 74, Christensen discloses (see Figure 1) the housing partially defines a feed path and wherein the device is a document reading device for reading indicia from documents transported along the feed path.

Regarding claim 76-78, Christensen discloses (see Figures 4 and 5) the at least one solderable surface is made in an irregular configuration, a hole or a pin.

10. Claims 59, 61-64, 66 and 68-71 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanaya et al. (U.S. Patent 5,155,401).

Regarding claim 59 and 66, Kanaya et al. disclose (see Figure 15) an imaging device comprising: an image sensor subassembly including an image sensor (33) mounted on a printed circuit board (35); an optical subassembly, the optical subassembly including an optical element (an aperture in disk 32) disposed on a substantially rigid member (housing or frame); at least one solderable surface formed on either of the printed circuit board or optical subassembly defining at least one solder receiving interface (28, 29) between the printed circuit board and the optical subassembly; and solder material for bonding the subassemblies disposed at the at least one solder receiving interface (see column 11, lines 20-24). Kanaya et al. further disclose (see Figure 15) the optical element having a single receive optical axis.

Regarding claims 61 and 68, Kanaya et al. disclose (see Figure 15) a housing having an inherent handle.

Regarding claims 62-64 and 69-71, Kanaya et al. disclose (see Figure 15) the at least one solderable surface is made in an irregular configuration or a pin (28, 29). The circuit board further has holes (see Figures 9-11).

11. Claims 3, 5, 6, 8-11, 14, 16, 17, 19-21, 25, 29, 30, 34, 36, 45, 48, 50, 51, 54 and 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kropp.

Regarding claims 3, 5, 16, 48 and 50, Kropp discloses soldering. Kropp does not disclose overmolding non-solderable material onto solderable material or insert molding solderable material in non-solderable material. However, the manner in which solderable material is disposed onto a non-solderable material is well known and is a matter of design choice. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to overmold or insert mold in the method of Kropp in order to obtain a solderable surface.

Regarding claims 6, 17 and 51, Kropp discloses (see Figure 4) making a frame (44) for the optical subassembly. Kropp does not disclose the frame comprising essentially solderable material, but the protrusions (40) are solderable material. However, the percentage of solderable material that the frame comprises is a matter of design choice. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a frame of solderable material in order to obtain a desired result.

Regarding claims 8, 9, 19, 20, 29, 30, 34, 36, 54, 56 Kropp discloses (see Figure 4) a pin (40) and hole (52) type configuration. The specific shape of the pin, as a thread screw is a simple matter of design choice. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to thread the pin in order to provide a tighter and stronger bond. Further it is a matter of design choice which surface is the pin and which is the hole.

Regarding claim 11, the pin and hole of Kropp fits snugly. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was

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made to make the pin smaller than the hole in order to allow for adjustments and make the device more adjustable.

Regarding claim 25, Kropp does not disclose testing the alignment of the image sensor during soldering. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to check the alignment by testing the image sensor on a test target in order to confirm the correct alignment of the parts and increase the accuracy and precision of the device.

Regarding claims 45 and 58, Kropp does not disclose aligning using a video monitor which displays an output indicative of an output of an image sensor. However, it is notoriously well known in the art to use vision systems to aid in the alignment of elements since vision systems allow for magnification of images. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to align using a video monitor based on an output of an image sensor in the method of Kropp to provide precise alignment.

12. Claims 60, 65, 67 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanaya et al.

Regarding claims 60 and 67, Kanaya et al. disclose a housing encapsulating the assembly. Kanaya et al. do not disclose the device partially defining a feed path. However, the type of device in which the assembly is mounted is a matter of design choice. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to mount the assembly of the apparatus of Kanaya et al. on any device to partially define a feed path as desired in order to provide correct alignment.

Regarding claims 65 and 72, Kanaya et al. disclose a pin as the solderable surface. Kanaya et al. do not disclose the solderable surface as a threaded screw. However, the choice of a threaded screw is a simple. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to thread the pin to form a threaded screw in order to provide a tighter and stronger bond.

13. Claims 75 and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen.

Regarding claim 75, Christensen discloses the device as part of an optical scanner. Optical scanners inherently have handles. Christensen does not disclose the scanner as a hand held optical reader. However, It would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the method to hand held devices in order to provide easy alignment for portable devices. Furthermore, the type of device in which the assemblies are part is a matter of design choice since it does not affect the core structure of the invention.

Regarding claim 79, Christensen discloses a pin as the solderable surface. Christensen does not disclose the solderable surface as a threaded screw. However, the choice of a threaded screw is a simple. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to thread the pin to form a threaded screw in order to provide a tighter and stronger bond.

Response to Arguments

14. Applicant's arguments filed April 20, 2001 have been fully considered but they are not persuasive.

Regarding claim 1, Kropp does disclose soldering without the components being substantially benched.

Regarding claim 13, the alignment of Kropp inherently includes the subassemblies being substantially configured so that the subassemblies are not benched against one another as claimed. That is, the subassemblies are inherently brought together to be substantially configured and not being benched as claimed.

Regarding claims 26 and 32, the protuberances of Kropp are pins as defined by Webster's Dictionary (see page 882, "a piece of solid material used especially as a support by which one article may be suspended from another"). Furthermore, the annular markings (52) of Kropp are holes as defined by Webster's Dictionary (see page 553, "an area where something is missing").

Thus, the rejection set forth above is proper.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is (703) 305-0539. The examiner can normally be reached on Monday-Friday from 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seungsook Ham, can be reached on (703) 308-4090. The fax phone number for the organization where the application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

txl
July 3, 2001


Que T. Le
Primary Examiner